What to read?
How to read?

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Goals

• Maximize benefits obtained from reading a scientific paper (or similar document)
  • Organize reading process
  • Set clear goals

• Presentation (partially) follows:
  M. J. Hanson, D. J. McNamee, “Efficient Reading of Papers in Science and Technology”,
  http://www.cse.ogi.edu/~dylan/efficientReading.html
Why read?

• What is the reason causing you to read a specific document?
  • Need an overview?
  • Need to present it to others?
  • ... don’t know?

• Why read a specific paper?
  • What did the authors do? Look at title, abstract
  • Read, file for later, drop it
How to find papers to read?

• So you are given a topic, a first paper to start with

• How to find additional material?
  • Other papers
    • Your assigned paper cited other sources, which cited other sources, ...
    • Your assigned paper might have been cited by others
    • Explore the “Citation graph”
  • Textbooks
    • No shame in reading a good book!

• Beware of the honeypot!
  • Wikipedia is not the only, final source of all wisdom
  • Go back to the ORIGINAL sources, not the rehashing of somebody else
Citation graph – Tools

- Many tools available to explore

- Search engines in general
  - Feed google, … with the right buzzwords – extracted from your paper

- Specialized search engines
  - Google scholar: [http://scholar.google.de/](http://scholar.google.de/)
  - DBLP: [http://www.informatik.uni-trier.de/~ley/db/](http://www.informatik.uni-trier.de/~ley/db/)

- Publishers
  - Springer: [http://www.springerlink.com/?MUD=MP](http://www.springerlink.com/?MUD=MP)
  - Elsevier

- Social networks for researchers
Citation graph – Usual suspects

- Topics typically appear in related set of venues
  - Typical set of conferences & journals
  - Side remark: Understand the way how science operates in its conferences and journals (with surprising variations among disciplines)

- How to find? Look at the references in your papers!
  - Also, talk to your advisors – especially for “up and coming” topics

- Check “famous workgroups” on certain topics
  - The scientific world is surprisingly small
  - … and the winner certainly takes it all: only relatively few publications make it into the level of frequently cited papers
  - Sometimes, tech reports can be up-to-date
  - Talk to your advisors!
Organize your literature search

- Don’t do random walk through all literature databases

- Stay close to your topic at hand
- Understand the claims, problems, ideas you want to get more information about

- Use tools!
  - Keep track of your papers/PDFs and their bibliographic information
  - Tools abound: jabref, endnote, reference manager, Mendeley, …
  - Use a tool that fits with your word processing setup
    - In our case: LaTeX; hence you need a tool that supports BiBTeX
Embarrassment of riches

- Using those tools, you’ll easily find dozens, hundreds of apparently relevant papers

- How to weed out the irrelevant ones quickly?

- How to extract most useful information from the relevant ones?
Reading for breadth

• Read the introduction
• Read the section headings
• Look at the tables and graphs to see what they say and read the captions
• Read the definitions and theorems
• Read the conclusions
• Consider the credibility of the article
  • Who wrote it? Are they well-known?
  • Where do they work? What biases might they have as a result of their employer?
  • Where was the article published? What is the reputation of the journal? Was the journal refereed?
  • When was it written? Might it be outdated or superseded?
• Skim the bibliography
  • How extensive is it?
  • Are the authors aware of current work?
  • Does it reference classic papers in this field?
  • Have you read any of the papers that are referred to?
  • Do you know relevant research that isn't cited?
Reading for depth: **Challenge** what you read!

- There’s a lot of junk published! → Try to tear paper apart!
- **Examine the assumptions**
  - Do their results rely on any assumptions about trends or environments?
  - Are these assumptions reasonable?
- **Examine the methods**
  - Did they measure what they claim?
  - Can they explain what they observed?
  - Did they have adequate controls?
  - Were tests carried out in a standard way?
- **Examine the statistics**
  - Were appropriate statistical tests applied properly?
  - Did they do proper error analysis?
  - Are the results statistically significant?
- **Examine the conclusions**
  - Do the conclusions follow logically from the observations?
  - What other explanations are there for the observed effects?
  - What other conclusions or correlations are there in the data that they did not point out?
Taking Notes – React to what you read

- Make notes as you read
- Highlight major points
- Note new terms and definitions
- Summarize tables
- Construct your own examples
- Write a summary – relate it to what you already know

- Organize your note taking
  - Put all notes in a consistent place
  - Link your notes with bibliographic information about a paper
    - E.g., put notes into a BibTeX entry for each paper
Finding out what to read

- Main sources of information: Referred conferences/journals
- Secondary: textbooks
- Secondary: Search engines specialized to academic topics

- Useless or severely limited sources: Web, wikipedia, …
  - Quality is sometimes decent, often appalling

- Which conferences/journals?
  - Depends on the branch of knowledge you are interested in
  - For networking, see: http://typo3.cs.uni-paderborn.de/fachgebiete/fachgebiet-rechnernetze/lehre/seminartips.html